

San Francisco Bay Conservation and Development Commission

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Application Summary

(For Commission consideration on September 7, 2017)

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Summary

Applicants: California Department of Fish and Wildlife
Solano County Department of Public Works

Location: The Hill Slough Wildlife Area managed wetlands, located to the south and east of Suisun City, at the northern edge of the Suisun Marsh, bisected by Grizzly Island Road, and bordered by Suisun Slough, Hill Slough, McCoy Creek and a tidal moat, in the Suisun Marsh Primary Management Area, Solano County (Exhibits A and B).



Project: The California Department of Fish and Wildlife (CDFW), proposes to: restore 850 acres of the Hill Slough Wildlife Area from managed wetlands to tidal wetland habitat, assisting in the recovery of state and federally listed species that inhabit Suisun Marsh; enhance the managed wetland habitat in two portions of the site; improve mosquito abatement; raise and widen Grizzly Island Road to improve its safety, provide bicycle access and reduce flood risk; and provide additional public access to the Hill Slough Wildlife Area. The site currently consists of eight individual managed wetlands, described herein as Ponds 1, 2, 3, 4, 4A, 5, 6, and 7, as shown in Exhibit B.

The project proponent would grade and re-contour portions of the site; raise and improve levees to protect existing upland habitat on the site; remove, plug or replace water control structures within the site; and lower and breach some internal and external levees to expose a portion of the site to daily tidal action. To reduce inundation risks to utilities and the Grizzly Island Road, which bisects the site, the project would raise and improve a one-mile section of the road and construct maintenance access ways and protective earthen berms around the footings of three PG&E towers within the site. The project would also construct two dedicated Class II bicycle lanes along Grizzly Island Road, approximately 2 miles of public trails on the improved and raised levee tops surrounding Pond 4, and a trail, parallel to Grizzly Island Road, to develop new connections between these paths and existing regional public access.

The project would be completed in two phases over two years and have a construction footprint of 80 acres. Approximately 192 acres of Hill Slough Wildlife Area would remain managed wetland/upland habitat for salt marsh harvest mouse habitat, and be protected from tidal influence by levees and culverts. The remaining 640 acres of managed wetland would be inundated by tidal action resulting from lowering and breaching portions of the interior and exterior levees. The first construction phase would involve preparing the Grizzly Island Road for the placement of fill, importing the necessary fill, importing and placing the necessary fill and allowing the surcharged soils to settle; construction of the PG&E tower berms; raising

and widening of Pond 4 levees; lowering and/or breaching inboard levees; replacing remaining or abandoning and sealing 19 culverts; and constructing the public access trails atop levees and along Grizzly Island Road (Exhibit C).

The second phase would involve completing the Grizzly Island Road improvements, including the Class II bicycle lanes; completing the raising and widening of Pond 4 levee and the construction of its public access trail; completing the public access connections to existing trails and placing signage; and lowering and breaching the external levees connecting the restored site to the tidal waterways of Suisun Slough, Hill Slough and McCoy Creek.

The restored site, improved public access and infrastructure berms would be maintained and managed by, CDFW and the improved Grizzly Island Road would be maintained and managed by Solano County Public Works Department.

Issues

Raised: The staff believes that the application raises four primary issues: (1) whether the project is consistent with the McAteer-Petris Act, the Suisun Marsh Preservation Act, San Francisco Bay Plan and Suisun Marsh Protection Plan policies regarding fill in managed wetlands; (2) whether the project would provide maximum feasible public access, consistent with the project; (3) whether the project is consistent with the Suisun Marsh Protection Plan and San Francisco Bay Plan policies on natural resources, including Environment and Land Use, Tidal Marsh and Tidal Flats, Fish, Other Aquatic Organisms and Wildlife, and Water Quality; and (4) Climate Change and Flooding.

Background

The project proponents are the California Department of Fish and Wildlife (CDFW) and Solano County Public (Solano County). There is no federal land or funding included as part of this project, however, the US Army Corps of Engineers has issued a federal permit.

The CDFW is proposing to restore and enhance an 850-acre portion of the CDFW owned 1,700-acre Hill Slough Wildlife Area, to tidal marsh habitat and improved managed wetlands¹.

¹ Managed wetlands are areas of historical tidal marshes that have been diked off from the Bay and are managed for wildlife, primarily waterfowl. Managed water intake, circulation and draining is the primary

A low-lying, portion of Grizzly Island Road bisects the project site and is owned by Solano County via a road right of way easement from the State of California. Solano County has granted an encroachment permit to CDFW to raise and improve the one-mile section of the road bisecting the project site. Once the Grizzly Island Road improvements are complete, CDFW will dedicate, the additional road right-of-way to provide for maintenance activities, and grant Solano County authority to maintain and operate the road.

Hill Slough Project Site. The proposed project is located in the northwest corner of the Suisun Marsh in the Commission's Primary Management Area. It is currently predominantly managed wetlands with upland habitat along its northern edge as well as on the slopes and tops of perimeter and interior levees and berms. The project site is surrounded by exterior earthen levees along Suisun Slough to the west, Hill Slough to the south, and McCoy Creek along the eastern boundary and is divided into eight "ponds" by the interior earthen levees and the road (Exhibit B). These ponds were constructed by CDFW to encourage waterfowl use and four of the ponds are currently managed as salt marsh harvest mouse habitat. The majority of the site is within intertidal elevations (0.95 – 6.35 feet NAVD88) and the site is currently composed of muted tidal marsh, brackish marsh, open water, seasonal wetlands and upland areas. The proposed project would restore full tidal exchange to six of the eight ponds by grading and contouring sections of the site, breaching and lowering portions of the site's exterior and interior levees and removing, plugging or replacing culverts. In addition to restoring tidal wetland acreage, these activities would restore natural salinity and marsh vegetation; would provide rearing habitat for fish and other wildlife; decrease the need for levee maintenance; and assist with mosquito abatement efforts by reducing the amount of standing water in the ponds. Two of the ponds, 4 and 4A, would remain as managed habitat for the salt marsh harvest mouse and the surrounding levees would be raised and widened and their culverts repaired or replaced to allow for adequate drainage. The construction of the transitional habitat adjacent the levee breaches would provide transitional wetland to upland ecotone, upland habitat and high tide refugia for protected and native species.

By opening the site to daily tides, the project would put the one-mile section of Grizzly Island Road, with current elevations ranging from 5 to 12 feet NAVD88, at risk of inundation due to high tides and storm events. To minimize this risk, CDFW proposes to raise Grizzly Island Road to 10 feet NAVD88 in the section that crosses the Hill Slough Wildlife Area. This elevation is equal to the FEMA 100-year coastal flood elevation for the area, but is one foot less than the freeboard recommended by FEMA (base flood elevation plus 1 foot). The road would be further improved by widening the existing traffic lanes, adding two new Class II bicycle lanes, and a wider gravel shoulder. The 64,768 cubic yards (cy) of fill necessary to widen and raise the road base would come from the 31,510 cy of soils excavated from the onsite levees as well as 33,258 cy of imported material necessary for road construction. The construction would be completed in phases and traffic circulation would not be interrupted over the course of the project due to the construction of temporary traffic lanes along the western edge of the road.

In addition to the two new bicycle lanes, proposed trail upgrades would improve and increase public access within the project site would also be improved and increased. A 1.76-mile loop trail around Pond 4 and a 0.31-mile long path would be built parallel to Grizzly Island Road connecting the loop trail to an existing pedestrian path across Grizzly Island Road (Exhibit D). The all-season paths would be constructed atop raised and widened levees and an existing access road, with a design elevation of 9.3 feet NAVD 88. One bench and two interpretive signs would be added to provide details about the restoration and wildlife.

CDFW has designed the project to be resilient to rising sea level and the FEMA 100-year flood elevation until mid-century. While, the road and the levee trails are projected to experience FEMA 50-year and 10-year floods, respectively, by mid-century, both the road and the levee public access trails will be built to withstand periodic over topping. Once the project is complete Solano County will assume responsibility for the maintenance and repair of Grizzly Island Road and CDFW will retain responsibility for the management and maintenance of the rest of Hill Slough project area, including the public access trails.

Eight PG&E high-voltage towers are located within the project site, three are in the western side of the site and would be subject to tidal action once the site is breached. In order to protect the tower footings, CDFW proposes to construct earthen berms around them, two of which would be connected by a 20-foot wide access berm that is wide enough to accommodate maintenance vehicles. This utility maintenance road would include an adjacent habitat berm (Exhibit F), to prevent boaters from approaching the tower and low hanging wires. The third tower located along Suisun Slough levee would also be protected with a berm around its footing.

BCDC Jurisdiction and Plans. The project site is within the Suisun Marsh Primary Management Area and San Francisco Bay and therefore must be consistent with the Suisun Marsh Preservation Act (SMPA) and the Suisun Marsh Protection Plan (SMPP), as well as the the McAteer-Petris Act and San Francisco Bay Plan (Bay Plan). Per the SMPP, projects in the Suisun Marsh Primary Management Area are subject to both plans, with the more specific policies being implemented unless there is a conflict, in which case the SMPP would supersede the Bay Plan policies.

Other Regional Plans. The Suisun Marsh is an area of national importance, as it is the western extent of the Sacramento-San Jose Joaquin Delta. As such there are a number of regional efforts underway that affect the Marsh and its management. As a result, projects within the Suisun Marsh should be considered in light of these plans.

Suisun Marsh Habitat, Management, Preservation and Restoration Plan (2014). The Suisun Marsh Habitat, Management, Preservation and Restoration Plan (Suisun Marsh Habitat Plan) is an interagency plan prepared by CDFW, U.S. Fish and Wildlife Service (USFWS), Bureau of Reclamation, National Marine Fisheries Service (NMFS), California Department of Water Resources (DWR), Suisun Resources Conservation District and CALFED Bay-Delta Program. It was developed in response to the “various conflicts regarding the use of Marsh resources, with a focus on achieving an acceptable multi-stakeholder approach to the restoration of tidal wetlands and the management of managed wetlands and their functions” (EIS/IER Summary, CDFW). The Suisun Marsh Habitat Plan incorporates tidal restoration and managed wetland activities/enhancements by addressing four major Suisun Marsh Habitat Plan resources and functions, (1) habitat and ecological processes; (2) public and private land uses; (3) levee system integrity; and (4) water quality. Implementation of the Plan will take place over a 30-year period

and is intended to balance the benefits of tidal wetland restoration and managed wetland enhancements. Its main elements include restoring between 5,000-7,000 acres of tidal marsh, enhancing over 40,000 acres of managed wetlands, maintaining waterfowl hunting, improving water quality for fish and wildlife habitat, and providing recreational opportunities targeted by the 2000 CALFED Ecosystem Restoration Program Plan. Hill Slough Tidal Wetlands Restoration Project would be the second tidal marsh restoration to be implemented under the Suisun Marsh Habitat Plan.

EcoRestore Program. In 2015, California Natural Resources Agency (Resources Agency), announced The EcoRestore Program to begin restoring the Sacramento-San Jose Joaquin Delta ecosystem. “California EcoRestore is an initiative to help coordinate and advance at least 30,000 acres of critical habitat restoration in the Sacramento – San Joaquin Delta over the next four years.” According to the Resources Agency, this project targets a broad range of habitat restoration projects, including projects to address aquatic, sub-tidal, tidal, riparian, flood plain, and upland ecosystem needs. As part of this program, the Commission reviewed and approved Tule Red Restoration Project in August 2016. The Hill Slough Wetlands Area Tidal Restoration Project is the second of several projects that would take place in the Suisun Marsh and is identified as a priority restoration project by the Resources Agency.

State Water Project Mitigation. In 2008, the USFWS issued a biological opinion for Delta Smelt for the incidental take of Delta smelt by the State Water Project and Federal Central Valley Water Project. Similarly, in 2009, NMFS issued a biological opinion for the incidental take of green sturgeon and listed salmon for the same project. These two biological opinions required mitigation for the take of listed species in the form of restoration and enhancement 8,000 acres of tidal marsh to improve and enhance fish habitat. This agreement is referred to as the Fish Restoration Program Agreement.

Project Description

Project

Details: The applicants, the California Department of Fish and Wildlife (CDFW) and Solano County Department of Public Works (Solano County) explains the need for the project its description as follows:

“The existing managed wetlands at the project site provide habitat for some species of waterfowl, yet the lack of hydrological connectivity with adjacent sloughs has reduced habitat for fish, shorebirds and other tidal dependent species.” Hill Slough wetlands’ habitat quality has been reduced by the presence of levees that alter and block the tidal flows into its historic marshes and that have negatively impacted fish and wildlife, some of which are endangered, rare or threatened. Productive managed wetlands exist throughout the Suisun Marsh, creating a critical need for additional tidal wetlands. “

“The fundamental goal of the proposed project is to restore natural tidal hydrologic processes within a significant portion of the project area, thereby promoting ecological processes and functions intended to aid in the recovery of listed plants and wildlife species. The specific project objectives associated with this goal include:

1. Create tidal brackish marsh habitat consisting of middle and high marsh habitats and establish vegetation similar to local tidal brackish marshes.
2. Enhance native resident estuarine fish assemblages, wading birds, shore birds, waterfowl, estuarine plankton assemblages, estuarine marsh plant communities, and terrestrial biotic assemblages associated with tidal wetland habitats.
3. Restore self-sustaining habitats, minimizing the need for active operation and maintenance and increasing the capacity of the project site to accommodate climate change, including anticipated sea level rise over the next 30 years.
4. Provide for public access that is compatible with protection of resource values.
5. Protect the integrity of Grizzly Island Bridge, Grizzly Island Road, and the PG&E transmission towers onsite from flooding and scour impacts associated with changed hydrology.

The proposed restoration project would be completed in two phases. The first phase is expected to start in the fall of 2017 and continue through 2018, and includes the road surcharge, which would be allowed to settle for approximately six months. During that time grading and contouring work within the site as well as the lowering and breaching of internal levees would take place. The second phase would begin as early as 2018, with full project completion in 2019.

In the Suisun Marsh Primary Management Area:

Phase 1: Site Preparation

1. Establish a temporary 300-foot by 175-foot fenced construction staging area in the northern section of Pond 1, along the western side of Grizzly Island Road;
2. Construct a temporary one-mile long, two-lane road along the western side of Grizzly Island Road using 2,122 cy aggregate, 1030 cy of recycled road material and on-site soils and shift traffic to the temporary lanes;
3. Construct Grizzly Island Road to grade and add 1.5 feet of surcharge, using 31,510 cy of excavated on-site, 23,601 cy of imported soils and 3,971 cy of aggregate;
4. Lower and/or breach approximately 5,000 feet of existing interior levees and use the excavated soil as fill for the road and transitional eco-tone habitat;
6. Lower and contour a 10.3-acre portion of Pond 1 by excavating to 4 foot NAVD88 to create new wetland area in existing seasonal wetlands and uplands and place excavated soils along the western side of the interior levee facing Whispering Bay, to strengthen it and provide transitional habitat;
7. Place excavated soils to create transitional habitat along edges of breaches.
8. Construct an approximately 750-foot long by 20-feet wide maintenance road access berm, elevation 8 feet NAVD88, between Grizzly Island Road and the

eastern PG&E transmission tower; and a 500-foot long by 20-foot wide earthen berm, at elevation 7 feet NAVD88, extending from the access berm eastward; and an earthen buttress berm at 8 feet NAVD88 surrounding the footings of the easternmost tower in Pond 2, along the Suisun Slough levee (Exhibit F).

Phase 2: Road Completion and Site Restoration

1. Remove surcharge soils from Grizzly Island Road and dispose of/use soils in the road's side slope construction;
2. Complete construction of Grizzly Island Road, including installation of 2,055 cy of asphalt for the surface of two 12-foot opposing traffic lanes, two 4-foot wide Class II bicycle lanes; installation of two 3-foot wide gravel shoulders; placement of 1,448 cy of pavement; striping; and removal of the temporary road;
3. Replace and/or abandon in place and seal 19 culverts in interior and exterior levees throughout the site; including the retrofit of four culverts and flap gates: two between Ponds 4 and 5; one between Pond 4 and 4A; and one between McCoy Creek and Pond 4;
4. Excavate a 60,000 square foot "pothole" to 2.4 feet NAVD88, and a 2,000 foot long swale at elevation 2.3 to 2.5 feet NAVD88 in Pond 4;
5. Grade existing ditches in Ponds 2, 3, and 4 to reduce mosquito breeding habitat;
6. Construct a 2,700 foot long, 0.31 mile trail at elevation 7 feet NAVD88, parallel to Grizzly Island Road, including an at-grade crossing connecting to the existing Grizzly Island Trail system;
7. Construct a 1.76 mile long public access loop trail surrounding Pond 4, by placing 31,000 cy of fill on the levee and the existing access levee road, raising the elevation to 9.3 feet NAVD88. The trail will be compacted aggregate base rock and at least 10 feet wide at; and
8. Breach and lower to 6.35 feet NAVD88 exterior levees at eight locations along Suisun Slough, Hill Slough, and McCoy Creek exposing Ponds 1, 2, 3, 5, 6 and 7 to tidal action and creating wetland habitat (Exhibit C).

Fill: The proposed project would result in a net total of 12,010 cy of solid fill in a managed wetland.

The new base of Grizzly Island Road, the levee improvements, the trail construction, access berm construction, creation of transitional habitat and ditch blocking would all require placement of solid fill. Aside from 33,197 cy of material specific to road construction and aggregate for completion of the road, bike paths and public access trails, the fill used to complete the project would be on-site soils excavated during the levee lowering, the construction of the new wetland area and small shallow pond known as the "pothole," levee breaching, and site grading and contouring. The fill calculations in Table 1 include all of the necessary excavation of native soils for the breaches, lowering of levees and grading and contouring for the creation of wetland areas, swales, a "pothole" and other project features, and the use of these on-site

soils for construction of transitional habitat, utility access berms, levee improvements and fill for the improvement of Grizzly Island Road. CDFW would import approximately 31,000 cy of road construction material, asphalt, aggregate and pavement to complete the improvement of Grizzly Island Road and 61 cy of aggregate surface the new public access trails. CDFW also proposes to remove or improve 19 water control structures on site: replace five culverts, four of which to include flap gates; cap and abandon one culvert in place; and remove 13 culverts.

Table 1

| Hill Slough Project Fill Totals | | | |
|--|-------------------------|----------------------------|--------------------------------|
| | Removed (cy) | New/Placed (cy) | Total Net Fill (cy) |
| Wetlands (solid fill) | 123,725 | 72,000 | -51,725 |
| Grizzly Island Road (solid fill) | 1033 | 64,768 | 63,735 |
| Total (cy) | 124,758 | 136,768 | 12,010 |

Public

Access: The project will result in new and improved public access at the site. The applicant proposes to construct one mile of Class II bike lanes in both directions along Grizzly Island Road; improve 1.76 miles of levee trails; and construct 0.31 miles of new trail connecting the levee trails to existing regional pedestrian paths. Interpretive signage and seating is also proposed along the new trails (Exhibit D). In addition, the applicants predict an increase in non-motorized watercraft use of the site once it is open to tidal flows given its proximity to Suisun City boat launch areas and its popularity with anglers.

| Type of Public Access | Linear Feet | Acres | Shoreline Length (linear feet) |
|------------------------------|--------------------|--------------|---|
| New | | | |
| Bicycle lanes (2) | 10,560 | .97 | 32,208 |
| Levee loop trail | 9,293 | 2.1 | |
| Connecting trail Signage? | 1,637 | .38 | |
| Total Project | 21,490 | 3.45 | 32,208 |

Schedule

and Cost: It is anticipated that Phase 1 of the project construction would commence in Fall 2017 and conclude in 2018. Phase 2, would commence as early as 2018 and conclude in 2019. The estimated total project cost is \$10 million.

Staff Analysis

A. **Issues Raised:** The staff believes that the application raises four primary issues: (1) whether the project is consistent with the McAteer-Petris Act, the Suisun Marsh Preservation Act, San Francisco Bay Plan and Suisun Marsh Protection Plan policies regarding fill in managed wetlands; (2) whether the project would provide maximum feasible public access, consistent with the project; (3) whether the project is consistent with the Suisun Marsh Protection Plan and San Francisco Bay Plan policies on natural resources, including Environment and Land Use, Tidal Marsh and Tidal Flats, Fish, Other Aquatic Organisms and Wildlife, and Water Quality; and (4) whether the project design is resilient to Climate Change and Flooding.

1. **Fill.** This project is located in the Primary Management Area of Suisun Marsh and proposed activities are entirely within a managed wetland, therefore Section 66605 of the McAteer-Petris Act, and pursuant policies on Bay Fill do not apply. However, both the Bay Plan and the Suisun Marsh Protection Plan have policies regarding fill in managed wetlands, which state that the design and evaluation of “[a]ny project for the restoration, enhancement or conversion of the managed wetlands to subtidal or wetland habitat ... should include an analysis of: ...potential fill activities, including the use of fill material such as sediments dredged from the Bay and rock to assist restoration objectives.”

a. **Restoration and Enhancement.** As described by CDFW and Solano County, the project was designed to minimize fill, provide adequate transitional habitat and refugia for upland species and protect existing infrastructure. The CDFW proposes to contour and grade the project site producing 73,850 cy of soils necessary for much of the restoration work. The amount of fill required for the levee improvements were determined by the availability of on site soils, the desired elevation and slopes of the proposed transitional habitat and protective berms, in conjunction with the local tidal range and the 100-year flood elevations. The proposed Grizzly Island Road elevation of 10 feet NAVD88 was designed taking into account the local high tides and the 100-year flood elevation. The width of the proposed road base was designed to allow future raising of the road as needed by Solano County.

The CDFW proposes to use the available on-site soils to create wetland and upland features for the tidal restoration and managed wetland enhancement. The work includes lowering and breaching of levees, and excavating to create a wetland area and swales. The excavated soils would be used to raise the elevation of levees, to create transitional habitat, construct protective berms for transmission towers, public access paths, and where appropriate, improve the Grizzly Island Road.

To ensure that the transitional habitat berms would be structurally sound, geotechnical investigations were conducted during the planning and design phase of the project. The evaluation of the berms’ safety and reliability included consideration of shrinkage estimates for the borrowed soils and slope stability and concluded that the on-site soils would be suitable for berms to be constructed over, and adjacent to,

existing levee embankments (Crawford & Associates, 2017).

To enhance the managed wetlands in Pond 4 and 4A, the maintenance of the perennial and seasonal wetlands and upland habitat would require installation of new water control structures including culverts and flap gates in Pond 4's southern levee and the levee between Pond 4 and 4A. The site currently has a variety of existing water control structures that would be removed, capped or replaced, including the 19 culverts. Structures that would not inhibit restoration or habitat development may be buried on site.

- b. **Grizzly Island Road and Public Access.** Over half of the project's on-site soils would be re-used for the construction of the restoration features. The remaining on-site soils would be used for the new side slopes of Grizzly Island Road, reducing the need for imported fill and limiting it to the materials specific to, and necessary for, road construction.

To complete the Grizzly Island Road improvements, including the bicycle lanes, connections to, and surfacing of, the public trails, the project would need to import approximately 33,000 cy of fill specifically for road construction. The widening and raising of the road and inclusion of bicycle lanes requires the levee beneath the road be widened at the base, with slopes varying from 3:1 to 10:1, to support the improvements as well as future raising of the road to adapt to sea level rise over time. The imported soils are necessary because on-site soils lack the characteristics necessary to meet engineering design and standards.

In addition to soil, the road improvement also requires:

- (1) 28,903 square yards of Geotextile fabric installed between the existing road and shoulder and the new, Type 1 material;
- (2) 23,601 cy of imported Type 1 material (an engineered fill imported from a local Surface Mining and Reclamation Act (SMARA) approved quarry) used for road base;

- (3) 6,154 cy of Class 2 aggregate base material to construct a temporary two-lane bypass road, two bicycle lanes and access road to Pond 4. This aggregate would also be used as trail surfacing material for the levee loop trail and the connecting trail;
- (4) 2,055 cy of hot mix asphalt to finish the new Grizzly Island Road, the bicycle lanes; and
- (5) 1,448 cy of cold plane AC pavement near the north and south ends of the Grizzly Island Road improvement.

The Grizzly Island Road improvement also underwent geotechnical review. Soils tests were conducted and embankment settlement rates and slope stability were assessed. Based on the analysis, the proposed embankment slopes for the improved road would be stable and have less chance of soil creep if the road were surcharged and allowed to settle for several months before being paved. According to the engineering report the site does not lie with a fault zone nor are there any known active faults within or

through the project area. The potential for fault rupture is considered to be low. Although a liquefaction study for the roadway was not done, a preliminary analysis of the site soils suggested that the soils 19 to 31 feet below the existing road surface are susceptible to liquefaction and consequential settlement (Crawford & Associates, 2016), as is typical for the soils in the entirety of Suisun Marsh.

As described above, the site contains three PG&E transmission towers that require protection once the site is breached. To respond to this need, the project proposes to construct protective access berms around the three PG&E tower footings in Pond 2 and construct a small 20-foot wide maintenance road to allow continued access to two towers, using on site soils. These berms would be built to 8 feet NAVD88 with 6:1 slopes, sufficient to protect the tower and resist erosion from tidal action. An additional lower berm (7 feet NAVD88 with a 10:1 slope) would be constructed adjacent the maintenance access berm to prevent approach by watercraft where low wires traverse the site. This berm would also provide high tide refugia and habitat benefits.

The applicant proposes to use all of the excavated on-site material for the fill portions of the project, except for the material required for roadway stability and surfacing. The Commission should determine whether the proposed project is consistent with the San Francisco Bay Plan and Suisun Marsh Protection Plan policies regarding fill in managed wetlands.

2. **Public Access and Recreation.**

- a. **Maximum Feasible Public Access.** Section 66602 of the McAteer-Petris Act states, in part, that “...existing public access to the shoreline and waters of the...[Bay] is inadequate and that maximum feasible public access, consistent with a proposed project, should be provided.” In addition, the Bay Plan policies on public access state, in part, that “a proposed fill project should increase public access to the Bay to the maximum extent feasible...” and that “access to and along the waterfront should be provided by walkways, trails, or other appropriate means and connect to the nearest public thoroughfare where convenient parking or public transportation may be available.” The SMPP Recreation and Access policies recognize the high demand for recreational uses of the Suisun Marsh. The SMPP Recreation and Access Policy 3 states that “[p]ublic agencies acquiring land in the Marsh for public access and recreational use should provide a balance of recreational needs by expanding and diversifying opportunities for activities such as bird watching, picnicking, hiking and nature study.” Policy 4 addresses the care of public access areas by stating “[a]gencies administering land acquired for public access and recreational use should be responsible for maintaining the areas and controlling their use. Signing on roads leading into the Marsh and maintaining litter receptacles at major public use areas should be provided by the appropriate local or State agency to prevent littering and vandalism to public and private property.”

Currently, public access near the Hill Slough tidal wetland restoration site consists of the Grizzly Island Trail, a multi-use pedestrian path that follows Highway 12 from Marina Boulevard in Suisun City to McCoy Creek Way and Grizzly Island Road,

informal trails formed along the top of existing levees, and the access road between Ponds 4 and 4A. The public access areas around the project site are used for bird watching, hiking, and cycling. However, the most popular activity is angling along Hill Slough, with up to 10,000 anglers fishing in Hill Slough annually. Parking is currently available near the crossing of Grizzly Island Road and McCoy Creek Way and also near the Grizzly Island Bridge. Visitors to the site also park on the non-designated, undeveloped shoulder along Grizzly Island Road to access different areas of the site.

CDFW owns and manages the Hill Slough Wildlife Area, a publicly owned site, and proposes to increase the public access opportunities at the project site by providing the following improvements as part of the restoration project:

- (1) Two designated, 4-foot-wide, Class II bicycle lanes along the improved section of Grizzly Island Road;
- (2) An all-season, 1.76 mile loop trail around Pond 4, atop the existing levee and access road;
- (3) A .31 mile long trail parallel to Grizzly Island Road, connecting the loop trail to Grizzly Island Trail via an at-grade crossing of Grizzly Island Road (Exhibits D, E);
- (4) New signage for cyclists, new interpretive signs and seating for hikers along the loop trail; and
- (5) Use of the site by non-motorized watercraft once levees have been breached and the small boats are able to enter via Suisun Slough and Hill Slough.

Applicants expect an increase in recreational use of the site due to these improvements and acknowledge that the higher number of new visitors may potentially impact sensitive wildlife species in the project area. To minimize impacts to wildlife, the new trails were placed in areas that are mostly elevated, away sensitive habitat areas, and surrounded by water. Interpretive signs explaining the importance of staying on the trails and protecting wildlife would be installed along the trails.

These public access improvements would be constructed at the same time as the work on Grizzly Island Road and the tidal restoration work within the managed wetlands and are expected to be completed by 2019. Once the project is finished, Solano County will be responsible for the upkeep and management of the two bicycle lanes running along Grizzly Island Road, including enforcing parking limits along the new lanes. CDFW will maintain and manage the new public access trails, seating and signage within their property.

- b. **Recreation Opportunities.** The SMPP Recreation and Access policies recognize the need for easy to access recreational areas within the Suisun Marsh. Recreation and Access Policy 2 states "...[t]hese areas should be located on the outer portions of the Marsh near populations centers and easily accessible from existing roads." In addition, it states that "[i]mprovements for public use should be consistent with protection of wildlife resources." The public access proposed by the applicants is located along the northern edge of the Suisun Marsh near Highway 12, where Grizzly

Island Road intersects with a residential neighborhood in Suisun City (Exhibit D). Suisun City is adjacent to Suisun Slough and the project site's western border, and the City's boat launches are within paddling distance of the site. Grizzly Island Trail, a regional multi-purpose trail, also leads from Suisun City to the northwestern corner of Pond 4A, where the new proposed public trail would connect to it at Grizzly Island Road. The new public access trails will be available for outdoor recreation year-around, specifically for walking, running, and wildlife viewing. Cycling would be possible along the Grizzly Island Road bicycle lanes which could potentially be extended in the future through partnership between Solano County and the Solano Transportation Authority. The Hill Slough Wildlife Area would also be accessible to small water craft during high tides. These amenities expand and diversify the recreational opportunities in the Hill Slough Wildlife Area. Existing, designated parking areas are available at both ends of the one-mile stretch of Grizzly Island Road that runs through the project site. The inclusion of interpretive signage along the trails at the restoration site would inform visitors of restoration activities, habitat values of the Marsh, and the importance of respecting wildlife and sensitive habitats along the trails. The continued maintenance by CDFW and Solano County of the public access trails and bicycle lanes, respectively, including trash clean up, encourages use and enjoyment of the Hill Slough Wildlife Area.

- c. **Appearance, Design, and Scenic Views.** Bay Plan Policies state that “[m]aximum effort should be made to provide, enhance or preserve views of the Bay and shoreline, especially from public areas.” and that “[v]iews of the Bay from vista points and from roads should be maintained by appropriate arrangements ... particular attention should be given areas along roads that that provide good views of the Bay.” Implementation of the project would not adversely impact present or future public access and views to the Bay, as both Hill Slough Wildlife Area and Grizzly Island Road are open to the public. The restoration work would open portions of the Hill Slough Wildlife Area to tidal flows and encourage the development of a variety of wetland and upland habitats. The project provides a diversity of public access opportunities and views throughout the Hill Slough Wildlife Area; riding a bike on the bike lanes would grant a different perspective of the site than walking on the trails, and the new seating at the midpoint of the loop trail would offer views of the Potrero Hills, Mount Diablo, the California Coast Range, and Montezuma Hills. The restoration activities and re-establishment of tidal marsh habitat on site would draw visitors to the site and could expand awareness of restoration efforts throughout the Suisun Marsh, and the ecological values of wildlife habitats in the area. Increasing the height of Grizzly Island Road may impede some views across the site to the west for users of the adjacent public access trails, however, it will increase the views for people traveling in automobiles and bicycles. The views to the east from the trails will likely be improved as a result of the trails being raised in elevation, generally offering a better view.

The Commission should determine whether the proposed project is consistent with the Bay Plan and the Suisun Marsh Protection Plan policies regarding maximum feasible public access consistent with the project, recreational opportunities, and appearance, design and scenic views.

3. **Natural Resources Policies.** The Bay Plan and SMPP have several policies related to natural resources.

- a. **Tidal Marsh Restoration.** The SMPP Environment Policy 1 states, “[t]he diversity of habitats in the Suisun Marsh and surrounding upland areas should be preserved and enhanced whenever possible to maintain the unique wildlife resource.” Environment Policy 2 states, “[t]he Marsh waterways, managed wetlands, tidal marshes, seasonal marshes, and low-land grasslands are critical habitats for marsh-related wildlife and are essential to the integrity of the Suisun Marsh. Therefore, these habitats deserve special protection.”

The Bay Plan Tidal Marsh and Tidal Flat Policy 4 states that, “[w]here feasible, former tidal marshes and tidal flats that have been diked from the Bay should be restored to tidal action in order to replace lost historic wetlands or should be managed to provide important Bay habitat functions, such as resting, foraging and breeding habitat for fish, other aquatic organisms and wildlife.”

The Bay Plan’s Fish, Other Aquatic Organisms and Wildlife Policy 1 states that “[t]o assure benefits of fish, other aquatic organisms and wildlife for future generations, to the greatest extent feasible, the Bay’s tidal marshes, tidal flats, and subtidal habitat should be conserved, restored and increased. Policy 2 states “[s]pecific habitat that are needed to conserve, increase or prevent the extinction of any native species, species threatened or endangered, ...should be protected.”

The Bay Plan Managed Wetlands Policy 2 states in part that, “[i]f the owner of any managed wetland withdraws any of the wetlands from their present use, the public should make every effort to... restore them to tidal or subtidal habitat... for the benefit of multiple species.”

Bay Plan Tidal Marsh and Tidal Flats Policy 6, Managed Wetland Policy 3, as well as SMPP Land Use and Marsh Management Policy 14, all contain similar language that, in summary, states that projects that restore, enhance or convert managed wetlands to wetland habitat should include clear and specific long-term and short-term biological and physical goals, success criteria, a monitoring program to assess the sustainability of the project, and provisions for long-term maintenance and management needs.”

Prior to European settlement of the Sacramento-San Joaquin Delta, Suisun Marsh was a vast, brackish water marsh, providing nationally significant wildlife habitat. Over time, managed wetlands were established in the Marsh, diking off the large areas of marsh from tidal action, and creating a tangled network of water control structures that allowed owners to cultivate vegetation specifically to attract waterfowl for hunting purposes. In recent years, EcoRestore and the Suisun Marsh Habitat Plan developed plans to restore a significant portion of Suisun Marsh to tidal marsh habitat.

Because Suisun Marsh is a brackish marsh, rather than the Bay-dominated salt marsh habitat, it has the potential to support native and listed species of plants and animals that have limited habitat in other areas of the Bay and Delta. Restoring the Hill Slough project area would increase brackish marsh habitat in the region and thereby

enhance, restore and protect this limited habitat and the species that inhabit it. The site would have transitional features that would provide high tide refugia for species in the near-term and may allow brackish marsh habitats space to migrate as sea level rises.

The Hill Slough Wildlife Area is owned by CDFW and the eastern half of this 1,700-acre property is already tidal wetlands. By restoring the remaining 850 acres of managed wetlands to tidal wetlands the project would effectively double the size of the Hill Slough Wildlife Area tidal marshes. The project would increase the habitat diversity of the site by including upland and transitional habitat which would benefit both protected fish and wildlife species, especially those reliant on brackish tidal marsh. This project goal would fulfill a portion of the Suisun Marsh Habitat Plan's overall goal to restore 5,000-7,000 acres of Suisun Marsh to tidal marsh in order to support listed species and further sustain critical habitats.

The applicants stated that the implementation of the project would result in a change in habitat types from 850 acres of managed wetland habitat to 640 acres of tidal marsh habitat and the enhancement of 192 acres of retained managed seasonal wetlands not converted to tidal marsh by the project. The tidal habitat would include 53 acres of seasonal/transitional wetlands; 19 acres of high marsh; 18 acres of mid-marsh; 110 acres of low marsh; and 440 acres of open water.

To allow for adequate tidal flow, portions of the existing interior and exterior levees would be breached excavating gaps in the existing levees. The breach locations were chosen to achieve a balance between three primary objectives: (1) to take advantage of the pre-existing drainage network; (2) to emphasize the re-creation of higher order tidal channels within the marsh restoration area; and (3) to provide drainage to the entire site (USFWS, June 2017). The breaching of the levees and restored tidal flow to the site would result in large increases of tidal prism in local channels. The ebb and flood volumes near the confluence of Suisun Slough and Hill Slough would increase by 67%, and in Hill Slough the ebb and flood volumes would increase by approximately 88%. The applicants expect vegetation typical of Suisun Marsh brackish tidal wetland to passively colonize the site. The existing transitional habitat would be expanded, creating more diverse habitat for terrestrial species such as the salt marsh harvest mouse, Ridgway's rail and a variety of marsh birds. By breaching the site, the project would increase habitat for Green sturgeon and Delta smelt as both of these species use the tidally influenced areas of Suisun Bay, Grizzly Bay and the Suisun Marsh. The portions of the site not influenced by tides would remain a mixed wetland complex, managed by CDFW.

- b. **Monitoring and Management.** The Bay Plan and SMPP require restoration projects to include success criteria, monitoring, long- and short-term biological and physical goals and a long-term maintenance and management program.

CDFW provided a Monitoring and Adaptive Management Plan (MAMP), which details the physical and biological objectives of the project and includes a monitoring program, performance metrics, management measures, and provisions for longer-term maintenance and management needs such as water quality and non-native

species control. The monitoring program includes the methods, criteria, metrics and frequency of monitoring the physical conditions, hydrology, water quality, fish, wildlife, vegetation, and infrastructure of the site. The results of such surveys would be used to manage, maintain and protect the restored habitat, species and improved and adjacent infrastructure of the site. CDFW proposes to implement the MAMP upon project construction by monitoring compliance to agency requirements (water quality, road stability), the project's ability to meet performance objectives (tidal hydrology, Ridgway's rail and salt marsh harvest mouse use of site), and includes potential supplemental studies that would provide information on the effects of enhancement action impacts on the ecosystem (special-status plant distribution, channel geometry). The supplemental studies would be conducted based upon the availability of additional funding and/or research partnering. CDFW would monitor and report their findings annually for five years once the site is breached. Specific project elements: water quality, infrastructure and vegetation, would be monitored annually for an additional five years, for a total of ten years. Given the mutable nature of restoration projects the MAMP was designed and written to allow revisions as warranted.

The applicants' MAMP includes details on location of instrumentation, the frequency of measurement, and types of anticipated data that would be collected and analyzed to assess water quality within Hill Slough. Data would be collected by the Department of Water Resources, California Data Exchange Center (CDEC) station located on Hill Slough, which would provide pre-project information to establish a water quality baseline. Data collection through the CDEC would continue into project construction through post construction for an additional five years. Having access to continuously collected data on the tide stages, conductivity, temperature, dissolved oxygen and turbidity would inform CDFW of water quality performance in Hill Slough. If it was determined that the project was the cause of any impairments to water quality, the level and intensity of monitoring would be revised for the project site, focusing on the specific water quality constituents of concern in order to resolve the water quality issues.

The Tidal Marsh and Flats Policy 7 and the SMPP Land Use and Marsh Management Policy 3, require project proponents to control invasive species in restoration projects. The MAMP describes the data collection methods to document the location and spread of non-native species and provides measures for the control of invasive species and adaptive management of the site over time. In summary, these measures include monitoring vegetation changes at the project site for development of typical Suisun Marsh wetland vegetation community and minimizing colonization by invasive species. The monitoring would be conducted tri-annually using aerial photography and ground-truthing to verify vegetation coverage and composition identified in the photos. Colonization by non-native, invasive plant species would result in the removal of the invasives through species-specific methods such as weeding, herbicides, or burning and more intensive monitoring.

SMPP Land Use and Marsh Management Policy 3, states that “[p]ractices recommended by the Solano County Mosquito Abatement District to control mosquitoes, including ditching and draining... efforts toward biological control of mosquitoes should be intensified.” The existing managed wetlands on Hill Slough Wildlife Area contains areas of stagnant water that facilitate the presence of mosquitoes. The project site lies within Solano County Mosquito Abatement District, which conducts regular monitoring and control of nuisance adult mosquitoes throughout the Marsh. The “cool weather” mosquito (*Culiseta inornata*) is known to exist at the project site, is expensive to control, and is a public health concern. To mitigate this issue, the project proponents propose to lower and remove existing levees that separate the site into 8 ponds where the ponded water occurs, which would greatly reduce mosquito breeding habitat. The existing levees have enabled water to pool on site and become stagnant water—providing excellent mosquito habitat. The applicants anticipate that improving the drainage in the managed wetlands and other non-tidal areas would greatly reduce mosquito production.

- c. **Fish and Wildlife.** Bay Plan Policy 2 regarding Fish, Other Aquatic Organisms and Wildlife, discussed above, also state that listed or candidate species ... under the California Endangered Species Act, or any species that provides substantial public benefits, should be protected, whether in the Bay or behind dikes. Further, Policy 4 (a) in summary directs the Commission to consult with the resource agencies whenever a proposed project may adversely affect an endangered or threatened plant or wildlife species. Policy 4 (b) also states that the Commission should not authorize projects that would result in the "taking" of any listed species unless the project applicant has obtained the appropriate "take" authorization. Finally, Policy 4 (c) directs the Commission to give appropriate consideration to the recommendations of the resources agencies to avoid possible adverse effects of a proposed project wildlife and its habitat.

Suisun Marsh is home to a number of listed species, and activities within the Marsh, including restoration, levee maintenance, or dredging have the potential to impact these species. To protect the habitat the Suisun Marsh provides for special status species, the regulatory and resource agencies worked together over the past several years to establish avoidance, minimization and mitigation measures for activities that regularly occur within the Suisun Marsh. As a result of this planning, the agencies developed the Suisun Marsh Habitat Plan, which describes permissible activities and corresponding minimization and mitigation measures. Responding to this planning effort, in 2013 NMFS and USFWS issued programmatic biological opinions for the Suisun Marsh Habitat Plan. These biological opinions provide incidental take authorizations and terms and conditions for activities listed in the Suisun Marsh Habitat Plan. Restoration of tidal marsh is programmatically covered in the biological opinions; however, they require a project level evaluation of each restoration project.

The applicants have designed this project to be consistent with tidal marsh restoration criteria described in the Suisun Marsh Habitat Plan and to reduce impacts to listed species through implementation of avoidance and minimization measures

during construction, such as establishing unvegetated buffer areas, using exclusion fencing to prevent the salt marsh harvest mouse from entering construction areas, and conducting surveys for the Ridgway's rail.

The overall Hill Slough Wildlife Area project design is consistent with the Suisun Marsh Habitat Plan, and the various biological opinions' terms and conditions. The proposed project objectives are focused on species persistence, recovery, and providing rearing, breeding and refuge habitats for aquatic and wetland dependent species that utilize brackish aquatic-tidal marsh habitat. Additionally, the project aims to provide topographic variability for habitat succession and resilience against future climate change and sea level rise. While the project would have temporary impacts to the site and available habitats, its overall design and diversity of habitat features would likely provide improved habitat for listed and native species as the site develops and matures.

In response to CDFW request for a project specific biological opinion, NMFS determined that the project as defined would not adversely affect Essential Fish Habitat (EFH), and that the project may affect, but is not likely to likely to adversely affect, listed salmonids, green sturgeon or their designated critical habitat for associated with implementation of the project (NMFS February 2013 Letter of Concurrence).

In response to CDFW's biological assessment of the Hill Slough Wildlife Area project, USFWS appended the project to the programmatic biological opinion for the Suisun Marsh Habitat Plan, and completed an individual project level biological opinion on June 23, 2017. The appended biological opinion addressed modifications to Grizzly Island Road, the new public access trails, the protective berms and access road for the PG&E towers, mosquito source reduction measures, and the MAMP. USFWS added more specific requirements regarding notification of any entrapment, injury or death of California Ridgeway's rail, salt marsh harvest mouse, California least tern and Delta smelt; conservation measures and education requirements for project personnel; and monitoring and reporting requirements. Based on the inclusion of conservation measures to minimize adverse effects to listed species and their habitats, the short timeframe for the restoration project, and the resulting increase in restored wetlands and associate upland habit associated with the project, the USFWS determined that the project as proposed was not likely to jeopardize the existence of Ridgway's rail, salt marsh harvest mouse, California least tern and Delta smelt, and provided an incidental take statement for the above species.

The proposed project objectives are species focused and include providing rearing, breeding and refuge habitats for aquatic and wetland dependent species that utilize brackish aquatic-tidal marsh habitat, and providing topographic variability for habitat succession and resilience against future climate change and sea level rise. While the project will have temporal impacts to the site, its overall design and habitat features would likely provide improved habitat for listed and native species as the site

develops and matures. The project as conditioned by USFWS and NMFS is protective of listed species. Further, it will provide significant habitat improvements for native species that inhabit brackish marshes.

- d. **Water Quality.** The Bay Plan Surface Area and Volume Policy 1 states “the surface area of the Bay and the total volume of water should be kept as large as possible in order to maximize active oxygen interchange, vigorous circulation, and effective tidal action...”

The Bay Plan Water Quality Policy 1 states, in part that “Bay water pollution should be prevented to the greatest extent feasible. The Bay’s tidal marshes, tidal flats, and water surface area and volume should be conserved and, whenever possible, restored and increased to protect and improve water quality.”

Policy 2 states that “[w]ater quality in all parts of the Bay should be maintained at a level that will support and promote the beneficial uses of the Bay as identified in the San Francisco Bay Regional Water Quality Control Board’s (RWQCB) Basin Plan and should be protected from all harmful or potentially harmful pollutants. The policies, recommendations, decisions, advice, and authority of the State Water Resources Control Board and the Regional Board should be the basis for carrying out the Commission’s water quality responsibilities.”

The restoration site is currently disconnected from daily tidal influence, and reconnecting it to the Bay would increase the Bay’s surface area by 640 acres, and increase tidal exchange of waters, oxygen, and nutrients. As a managed wetland, the water levels on site have been previously managed within a system of eight ponds separated by levees with a variety of water control structures. Restoring tidal action to six of the eight ponds through breaching and lowering of internal and external levees would improve circulation within the site, preventing the pooling of water. By removing or plugging numerous culverts within the site, the tidal waters would be directed towards the breached areas, naturally creating drainage channels.

The two ponds that would remain managed wetlands would be better managed due to the replacement of old culverts and flap gates to allow improved water exchange. Seasonal ponding within the two ponds would also be reduced with the creation of new swales and a “pothole” to collect and drain the waters. The project’s MAMP proposes to monitor the physical evolution of the site once it is re-opened to daily tidal action, and to assess if the tidal hydrology, channel geomorphology and networks are developing as planned.

The primary water quality concern for this project is methylmercury contamination and bio-magnification in the food web. There is a large amount of mercury biologically available in the San Francisco estuary ecosystem due to abandoned, historic mercury mines in the Coast Range, use of mercury for gold extraction in the Sierra Nevada, and atmospheric deposition across the Bay Area. Restoring sites to tidal action may increase the potential for mercury to methylate, making it potentially bio-available to animals living in the Suisun Marsh. Methylmercury dynamics in estuaries are complex and can be cyclical in nature, and little is known about the status of methylmercury in the Suisun Marsh. The applicants indicate that the project would result in an overall

reduction in methylmercury concentrations on the site by improving tidal exchange and reducing prolonged periods of inundation within the existing managed wetlands areas. However, as mercury methylation is cyclical, it is the Staff's understanding that increased wetting and drying of a site, such as with tidal action, may increase methylmercury production, which is counter to the applicant's perspective. The San Francisco Bay Regional Water Quality Control Board (Water Board) states that "[t]idal wetlands can be both sources and sinks of total mercury and methylmercury, and many factors can affect wetland biogeochemistry and thus methylmercury production. The limited data and studies suggest that tidal restoration results in many factors that could reduce methylmercury production but that overall methylmercury supply can potentially increase because of greater hydrologic exchange. Based on the design, the project is not expected to cause or contribute to a net increase in mercury or methylmercury loads to Suisun Bay." To address this issue, the Water Board's water quality certification requires the project proponents to confirm that the project is not causing or contributing to a net increase in mercury or methylmercury loads to Suisun Bay by either (1) contributing to the Regional Monitoring Program for Water Quality in the San Francisco Bay to fund project(s) to support regional methylmercury monitoring in Suisun or (2) develop and implement a Methylmercury Monitoring Plan for the project site.

Related to potential turbidity impacts, the applicants stated that because the site currently consists of non-tidal uplands, managed wetlands, levees and embankments, and that the soils are consolidated, the increase of suspended sediment and turbidity are expected to be minimal. CDFW proposes to breach the exterior levees during a low tide to prevent excavated soils from entering the adjacent tidal sloughs. Once tidal action is fully restored, the suspended sediment from the sloughs and unconsolidated soils on the site will be reworked by the tides, with suspended sediments depositing over time. Initial impacts of sediment and soil movement are expected to be temporary in nature and will reduce over time.

As required by the Water Board, construction impacts from the raising and widening of Grizzly Island Road and the PG&E tower access berms will be addressed by the development and implementation of a Stormwater Pollution and Prevention Plan (SWPPP), which would include Best Management Practices ensuring no sediments or pollution would be released in to Suisun Slough, Hill Slough or the interior of the site. Further, the construction drawings and plans submitted to the Commission include an erosion and sediment control plan.

To further reduce the potential for discharges of pollutants, the project would also comply with minimization/mitigation measures outlined in the Suisun Marsh Habitat Plan's EIS/EIR. These measures include daily inspections of all equipment for oil and fuel leaks, trash and construction debris removal, maintenance of waste facilities, preparation and implementation of erosion and sediment control plan, and developing a hazardous material plan.

The Commission should determine whether the proposed project is consistent with the Bay Plan and the Suisun Marsh Protection Plan policies regarding natural resources, including Tidal Marsh and Tidal Flats, Managed Wetlands, Fish, Other Aquatic Organisms and Wildlife, and Water Quality.

- 4. Climate Change and Flooding.** The Commission's Climate Change policies include discussions of habitat restoration projects as well as protection from and adaptation to climate change, and specifically rising seas. Bay Plan Climate Change Policy 2 states that "When planning shoreline areas ... a risk assessment should be prepared by a qualified engineer and should be based on the estimated 100- year flood elevation that takes into account the best estimates of future sea level rise and current flood protection and planned flood protection that will be funded and constructed when needed to provide protection for the proposed project or shoreline area. A range of sea level rise projections for mid-century and end of century based on the best scientific data available should be used in the risk assessment. Inundation maps used for the risk assessment should be prepared under the direction of a qualified engineer. The risk assessment should identify all types of potential flooding, degrees of uncertainty, consequences of defense failure, and risks to existing habitat from proposed flood protection devices."

Bay Plan Climate Change Policy 3 adds that "To protect public safety and ecosystem services, within areas that a risk assessment determines are vulnerable to future shoreline flooding that threatens public safety...should be designed to be resilient to a mid-century sea level rise projection. If it is likely the project will remain in place longer than mid-century, an adaptive management plan should be developed to address the long-term impacts that will arise based on a risk assessment using the best available science-based projection for sea level rise at the end of the century."

Bay Plan Climate Change Policy 4 states that "To address the regional adverse impacts of climate change, undeveloped areas that are both vulnerable to future flooding and currently sustain significant habitats or species, or possess conditions that make the areas especially suitable for ecosystem enhancement, should be given special consideration for preservation and habitat enhancement and should be encouraged to be used for those purposes."

Bay Plan Climate Change Policy 7 states that "Until a regional sea level rise adaptation strategy can be completed, the Commission should evaluate each project proposed in vulnerable areas on a case-by-case basis to determine the project's public benefits, resilience to flooding, and capacity to adapt to climate change impacts." Further, it states that projects that have regional benefits, advance regional goals such as natural resource restoration, should be encouraged if their regional benefits and their advancement of regional goals outweigh the risk from flooding.

The Bay Plan Safety of Fills Policy 4 requires that "[m]easures should be provided to prevent damage from sea level rise and storm activity that may occur on fill or near the shoreline over the expected life of a project."

Bay Plan and SMPP Managed Wetland policies state that the design and evaluation of “[a]ny project for the restoration, enhancement or conversion of the managed wetlands to subtidal or wetland habitat ... should include an analysis of: ...flood management measures.”

The applicants used the National Resource Council (NRC, 2012) sea level rise projections for the San Francisco Bay, and previous modeling of tidal marsh resilience to sea level rise throughout the San Francisco estuary (Schile et al. 2014) to conclude that tidal areas of the Suisun Marsh would have a high likelihood of adapting and persisting in the future. This analysis included a review of suspended sediment concentrations in the region to determine if the project could adapt to sea level rise through natural accretion of sediment. Schile et al. 2014 determined that northwestern Suisun Marsh has a high suspended-sediment concentration and that the brackish marsh vegetation community accretes and builds organic soils, both of these characteristics promote sediment accumulation and marsh accretion. The lowered levees, acting as mid-marsh islands would slow wind waves inside the newly formed wetlands. Breach locations were designed to enhance tidal circulation and sediment transport into the site and internal levees would be left in place to further promote sedimentation, maximizing accretion rates.

The project was designed to maximize its resilience to sea level rise. Because the site is proposed for restoration to tidal marsh habitat, flooding associated with storm events would part of the natural ecological functioning of the site. The two ponds proposed to remain as managed wetlands would have water control structures that would allow maintaining water levels appropriate for the target habitat and wildlife species in that portion of the project site.

The project includes bolstering Pond 1’s west levee with a sloped habitat berm designed to protect the residences along the west shore of Whispering Bay in Suisun City from coastal erosion due to waves generated in the Hill Slough restoration area. Raising and widening of Pond 4’s levee to 9.3 feet NAVD88 and maintaining Ponds 4 and 4A as non-tidal, upland habitat provides a wide area that would limit impacts to residences to the north of the project site. This remaining managed wetland area buffers the area to the north from the open tidal water that would occur south of Pond 4A. Tidal action and waves from breaching levees along the western portion of the site would be dampened by the expanse of restored marsh and the shallow slope on the side of Grizzly Island Road, which would block any waves less than 10 feet NAVD88 from traveling from the west side of the site to the east. Additionally, the location of the Hill Slough Wildlife Area along the northern edge of the Suisun Marsh has adequate space for marsh migration along its northern project boundary.

Specific activities were included in the project to protect existing infrastructure from sea level rise and designed based on sea level rise projections for 2050. These activities include the raising of Grizzly Island Road to the FEMA 100-year flood elevation, protecting the PG&E tower footings with access and protective berms, raising the Pond 4 levees to

100-year high-tide elevations. In addition to these project elements, the proposed widened base of Grizzly Island Road would provide future space to raise the road another foot to 11 NAVD88 should future conditions require it.

The Commission staff worked with CDFW and Solano County to better understand the risk to the project and area from rising sea. CDFW states that the project is resilient to mid-century sea level and greatly improves the site when compared to current conditions. However, as noted by the Staff, the Suisun Marsh is very low in elevation, and is vulnerable to impacts from rising seas, particularly after mid-century. CDFW has not yet developed an adaptive management plan to address the potential impacts of climate change or other flooding issues over the extended life of the project. CDFW states that as sea level rise progresses, they will need to continue to assess the site conditions and those of the surrounding area to determine what adaptive management measures would be effective.

The Commission should determine whether the proposed project is consistent with the McAteer-Petris sections and relevant San Francisco Bay Plan policies regarding safety of fill, flooding, and climate change.

- B. **Review Boards.** The project was not reviewed by the Engineering Criteria Review Board and the Design Review Board.
- C. **Environmental Review.** The Suisun Marsh Habitat, Management, Preservation and Restoration Plan EIR was certified by CDFW in December 2011. The Suisun Marsh Habitat, Management, Preservation and Restoration Plan EIS Record of Decision was signed by the Bureau of Reclamation and the United States Fish and Wildlife Service in April 2014. The Hill Slough project is part of the programmatic analysis of the overall Plan, but was not evaluated at the project level.

The Drought Executive Order by Governor Brown (January 17, 2014 Proclamation) directed CDFW to implement projects responding to drought conditions through habitat restoration on CDFW-owned or managed property for the benefit of fish and wildlife impacted by the drought. The executive order temporarily waived CEQA requirements.

D. **Relevant Portions of the McAteer-Petris Act**

- 1. Section 66602
- 2. Section 66632

E. **Relevant Portions of the San Francisco Bay Plan**

- 1. *San Francisco Bay Plan* Policies on Fish, Other Aquatic Organisms, and Wildlife
- 2. *San Francisco Bay Plan* Policies on Water Quality
- 3. *San Francisco Bay Plan* Policies on Water Surface Area and Volume
- 4. *San Francisco Bay Plan* Policies on Tidal Marshes and Tidal Flats
- 5. *San Francisco Bay Plan* Policies on Climate Change

6. *San Francisco Bay Plan* Policies on Safety of Fills
7. *San Francisco Bay Plan* Policies on Public Access
8. *San Francisco Bay Plan* Policies on Appearance, Design and Scenic Views
9. *San Francisco Bay Plan* Policies on Managed Wetlands

F. Relevant Portions of the Suisun Marsh Preservation Act

1. Section 29009
2. Section 29011

G. Relevant Portions of the Suisun Marsh Protection Plan

1. Suisun Marsh Protection Plan Policies on the Environment
2. Suisun Marsh Protection Plan Policies on Recreation and Access
3. Suisun Marsh Protection Plan Policies on Land Use and Marsh Management

H. Relevant Portions of the Solano County Policies and Regulations Governing the Suisun Marsh

1. Section II Suisun Marsh Policies Contained in the Solano County General Plan –Resource Conservation and Open Space Elements

Exhibits

- A. **Vicinity Map**
- B. **Site Plan**
- C. **Project Features**
- D. **Proposed Public Access**
- E. **Public Access on Grizzly Island Road**
- F. **Transmission Towers Protection and Access Detail**
- G. **Site Photos: Public Access**
- H. **Environmental Documentation Summary**